

15, 16, 18, 20, 21, 22 and 23). Therefore, it would be easy for one of ordinary skill to determine the scope of the amended claims.

Claims 1, 12 and 36 have also been amended to delete the provision that the polymer matrix does not comprise polyethylene.

A list of the claims showing the amendments that have been made herein is attached hereto on a sheet titled "LIST OF AMENDED CLAIMS WITH MARKINGS TO SHOW CHANGES MADE".

Claims 1 - 18 and 36 - 51 are in the case.

No new matter has been added.

Rejection of claims 1 - 18 and 36 - 51 under 35 USC §112, first paragraph, as containing subject matter which was not described in the specification.

It is respectfully requested that the rejection of claims 1 - 18 and 36 - 51 under 35 USC §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention be reconsidered in view of the amendments and upon consideration of the reasons discussed below and be withdrawn.

Claims 1 - 18 and 36 - 51 were rejected on the grounds that the limitation excluding polyethylene was not described in the specification. The independent claims in which this limitation appeared have been amended to delete the limitation. It should be noted that this amendment is not intended to, nor should be deemed to, admit the correctness of the rejection of these claims made under 35 USC §112, first paragraph.

Accordingly, it is believed that no grounds now exist for a rejection under 35 USC §112, first paragraph, and it is respectfully requested that the rejection be reconsidered and withdrawn.

Rejection of claims 7 and 45 under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which application regards as the invention.

It is respectfully requested that the rejection of claims 7 and 45 under 35 USC §112, second paragraph, as being indefinite because it is unclear how the claims further

limit claims 1 and 36, from which they depend, respectively, since "vinyl polymer" appears to describe the polyethylene that was excluded in claims 1 and 36.

For the reasons set forth above, and with the same provisions, it is believed that no grounds now exist for a rejection under 35 USC §112, second paragraph, and it is respectfully requested that the rejection be reconsidered and withdrawn.

Rejection of claims 1, 7 - 12, 17, and 18 under 35 USC §102(b) as anticipated by French Patent Publication 2 702 929 to Autant *et al.*

It is respectfully requested that the rejection of claims 1, 7 - 12 and 17 and 18 under 35 USC § 102(b) as anticipated by French Patent Publication 2 702 929 to Autant *et al.* be reconsidered in view of the amendments to the claims and upon consideration of the reasons discussed below and be withdrawn.

Claims 1 and 12, which are the independent claims from which claims 7 - 11 and 17 and 18 depend, have been amended to describe the novel particles and composition, respectively, as comprising a triazole fungicide dispersed in a polymer matrix which releases the triazole fungicide at biocidally beneficial levels over a period of at least two to twelve weeks and having a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide.

in order to anticipate a claim, a reference must teach, explicitly or inherently, each and every element of the claim. Every limitation of the claim must be given weight.

It is maintained that the rejected claims, as amended, now describe elements that are not taught, either explicitly or inherently, by the Autant *et al.* reference. The claims now require that the particles and the composition: (1) releases the triazole fungicide at biocidally beneficial levels over a period of at least two to twelve weeks, and (2) has a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide.

As to the first element, the Autant *et al.* reference (the English translation of pertinent parts of the French patent document) appears to describe a matrix-type microparticle capable of controlled release of a biocidal agent, and states that the inclusion of surfactants in the matrix can be used to influence the kinetics of the liberation of the biocide(s) contained in the matrix. The size of the particles is described

as being from 0.05 mm to 2 mm (50 - 2000 microns). One of the biocidal agents that can be used is 1-((2-(2,4-dichlorophenyl)-1,3-dioxolan-2-yl)methyl-1H-1,2,4-triazole -- (azaconazole). However, it is maintained that the Autant *et al.* reference does not teach, either explicitly or inherently, that its microparticles release a triazole at biocidally beneficial levels over a period of at least two to twelve weeks, as is required in the present claims. Furthermore, the feature of requiring a release of the triazole at biocidally beneficial levels over a period of at least two to twelve weeks is not mere design choice -- this time period coincides with the initial germination, sprouting and early growth period of the agronomic plant that is to be protected. And, the Autant *et al.* reference appears to be silent as to this feature.

As to the second element that has been added to the present claims -- the reduction of phytotoxicity by at least 50% as compared to conventional fast-release formulations of the triazole fungicide -- it is maintained that the Autant *et al.* reference is also silent. In fact, it is not found where phytotoxicity is addressed in the Autant *et al.* address reference.

Nor do the features of release of the triazole at a certain level for a period of two to twelve weeks, or reduction of phytotoxicity by at least 50% appear to be inherent in the particles or compositions of Autant *et al.* Anticipation by inherency requires that 1) the missing descriptive matter be "necessarily present" in the prior art reference and that 2) it would be so recognized by persons of ordinary skill in the art. *Continental Can Co. v. Monsanto*, 20 USPQ2d, 1746,1749 (Fed. Cir. 1991). In the present case, the formulation of a particle or composition capable of providing the claimed features requires control of a number of interacting parameters. For example, in the present specification at page 34, line 15 to page 35, line 21, various factors are described that affect the rate of release of the triazole. Included in these factors are the type of polymer, polymer chemical characteristics, the size of the particle, the loading of the active ingredient, whether the active is suspended or dissolved in the matrix, and the dispersing agent used, if any.

As discussed above, the Autant *et al.* references does not describe the features involving the release of the triazole at a certain level for a period of two to twelve weeks, or the reduction of phytotoxicity by at least 50%. Because these features are not recognized, the Autant *et al.* reference cannot provide any guidance that would lead a

skilled practitioner to arrive at the claimed invention, and the provision of a particle or composition that would be within the bounds of the claims would be purely by chance.

The chances of this occurring in the particles of Autant *et al.* are made even lower because of the fact that the size of the particles of Autant *et al.* (50 - 2000 microns; preferred 100 - 1000 microns) are generally larger than the particles of the present invention (0.2 - 200 microns; preferably 1 - 50 microns). And, as discussed at page 18, line 22 - page 19, line 14, particle size is an important parameter for the tailoring of the release rate of the active ingredient.

Consequently, it is believed that the claimed features of the present particles and compositions would not necessarily be present in the particles or compositions of Autant *et al.*. It is also believed that there is no basis to expect that a skilled practitioner would recognize that those features would be present. Therefore, it is maintained that the Autant *et al.* reference does not reach either of the two features added by the amendment, and therefore cannot anticipate the claims.

Because the Autant *et al.* reference does not teach particles or compositions that either (1) release a triazole fungicide at biocidally beneficial levels over a period of at least two to twelve weeks, and (2) have a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide, it is maintained that the reference does not teach every element of the claimed invention, and, therefore, does not anticipate the claims. Accordingly, it is respectfully requested that the present rejection be reconsidered and withdrawn.

Rejection of claims 1 - 18 and 36 - 51 under 35 USC §103(a) as being obvious over U.S. Patent No. 5,589,194 to Tsuei *et al.* in view of FR 2 702 929 to Autant *et al.*, and further in view of European Patent Specification 0 201 214 to Kanda *et al.*, Derwent Abstract 97-80461 to Stock, Applicant's admission at pages 1,2 of the specification, and WO 90/103732 to Russell *et al.*

It is respectfully requested that the rejection of claims 1 - 18 and 36 - 51 under 35 USC §103(a) as being obvious over U.S. Patent No. 5,589,194 to Tsuei *et al.* in view of FR 2 702 929 to Autant *et al.*, and further in view of European Patent Specification 0 201 214 to Kanda *et al.*, Derwent Abstract 97-80461 to Stock, Applicant's admission at pages 1,2 of the specification, and WO 90/103732 to Russell *et al.*, be reconsidered in

view of the amendments to the claims and because of the reasons discussed below and be withdrawn.

Claims 1, 12 and 36, which are independent claims from which all rejected claims depend, have been amended to describe the novel particles, composition, and method, respectively, as comprising a triazole fungicide dispersed in a polymer matrix which releases the triazole fungicide at biocidally beneficial levels over a period of at least two to twelve weeks and having a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide.

It is respectfully maintained that the Tsuei *et al.* reference, alone or in combination with any one or more of the cited secondary references, neither teaches nor suggests every element of the present claims.

Tsuei *et al.* describes a method of microencapsulation and the microcapsules produced. The method is described as dissolving an active component in a solid matrix-forming material that has been thermally softened, and then injecting the mixture into a quenching liquid to form microcapsules. The active components that are described by Tsuei *et al.* (at col.4, lines 8 - 36) appear to focus primarily on nutrients and cosmetics, and the like. Fungicides are not mentioned, and triazoles are absent. There is no mention of a required period of release of a triazole fungicide, or of a 50% reduction in the phytotoxicity of a composition that includes a triazole. These elements, which are included in every present claim, must, therefore, be supplied by a secondary reference. Moreover, the art cited must suggest a reason to combine or modify so as to arrive at the claimed invention. It is respectfully maintained that the secondary references do not supply the requisite elements, nor do they supply a motivation to modify any one or more of them to arrive at the claimed invention.

In particular, as discussed above, the Autant *et al.* reference lacks a teaching of particles, compositions, or methods that either (1) release a triazole fungicide at biocidally beneficial levels over a period of at least two to twelve weeks, or (2) have a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide, as required by all claims.

The Kanda *et al.* reference describes the production of polymeric microparticles having pesticidal activity that are formed by emulsion polymerization of ethylenically unsaturated monomers in a mixture containing a pesticide (col. 2, lines 10 - 27). The

pesticide can be a fungicide (col.1, line 8, and col. 5, lines 47 - 57), and, among a long list of potential candidates, the fungicide can be an azole (col. 6, lines 38 - 41). The particles formed are from 0.01 to 2 microns in size (col. 2, lines 11 - 14). The reference states that its particles can carry an active substance in a chemically stable manner and release it at an optimum concentration for a long period of time (col. 2, lines 36 - 39). However, the Kanda *et al.* reference is silent as to the use of triazole fungicides, and does not teach or suggest particles, compositions or methods that either (1) release a triazole fungicide at biocidally beneficial levels over a period of at least two to twelve weeks, and (2) have a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide, as required in the claims.

Derwent Abstract 97-80461 of a publication by Stock, appears to review various crop protection formulations. The abstract appears to be limited to effects of formulation on activity of foliar-applied pesticides. Although such terms as "phytotoxicity", "fluquinconazole" (a triazole), are mentioned, and it is stated that "microencapsulation lowers toxic potential, reduces volatility and improves persistence", such limited disclosure falls far short of supplying the elements that teach that particles, compositions, or methods must (1) release a triazole fungicide at biocidally beneficial levels over a period of at least two to twelve weeks, and (2) have a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide, as required in the present claims.

The Office points to a statement by the Applicant at pages 1,2 of the specification as an admission of an element of the claim. However, the extent of the teaching at that point of the specification appears to be limited to the ideas that some triazole fungicides can be phytotoxic, and that controlled release of a pesticide has occasionally been used as a method of controlling its phytotoxicity. It is maintained that this information does not provide an admission that is pertinent to either the feature describing the two - to-twelve week period of release, or the reduction in phytotoxicity of at least 50%, which are now elements of the claims.

WO 90/103732 to Russell *et al.* describes fungicidally active enzyme preparations that can also include certain fungicides -- with some triazoles included. However, the publication appears to be silent as to the inclusion of such active

ingredients in a controlled release form. Also, it makes no mention of a particular period of release of the triazole fungicides, nor of any particular reduction in phytotoxicity. Accordingly, it is maintained that the WO 90/103732 publication cannot provide the claimed elements that are missing from the Tsuei *et al.* patent, as well as from each of the other cited references.

It is also maintained that no suggestion or motivation is provided in the art to modify any one or more of the cited references in a manner that would arrive at the invention as presently claimed. None of the cited references is believed to recognize the importance of the combination of a certain amount of reduction in the phytotoxicity of a triazole and the release of the triazole at beneficial levels for two to twelve weeks (as described in the claims) as an objective. Thus, the cited references cannot provide guidance to arrive at the solution that is described by the present claims.

Accordingly, it is maintained that there is no reference that, alone or in combination, teaches or suggests the presently claimed invention. It is respectfully requested, therefore, that the present rejection be reconsidered and withdrawn.

Request for reconsideration:

It is respectfully requested that the amendments that are requested above be entered into the case and that the claims be re-examined in view of the present amendments and the reasons that are discussed above and be found to be allowable. If one or all of the claims are deemed to not be allowable, the Examiner is invited to call the undersigned attorney at the number given below for resolution of any remaining issues.

Other matters -- copending applications:

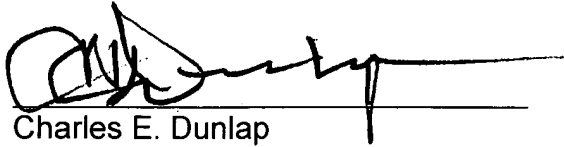
Applicant wishes to bring to the Examiner's attention certain copending applications that have been assigned to Applicant. These applications include 09/950,114, 10/115,765, and 10/191,703. This disclosure is for informational purposes and should not be considered to be an admission or assertion that such applications are or are not pertinent to the present application.

Respectfully requested,

NELSON MULLINS RILEY & SCARBOROUGH

November 27, 2002

Date

A handwritten signature in black ink, appearing to read "Charles E. Dunlap", written over a horizontal line.

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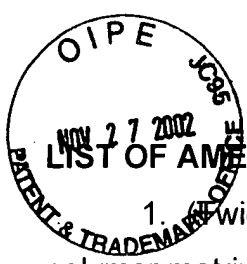
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**LIST OF AMENDED CLAIMS WITH MARKINGS TO SHOW CHANGES MADE**

1. (Twice amended) A particle comprising a triazole fungicide dispersed in a polymer matrix [, provided that the polymer matrix does not comprise polyethylene] which releases the triazole fungicide at biocidally beneficial levels over a period of at least two to twelve weeks and having a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide.

12. (Twice amended) A fungicidal composition comprising:

- (a) a particle comprising a triazole fungicide dispersed in a polymer matrix [, provided that the polymer matrix does not comprise polyethylene] which releases the triazole fungicide at biocidally beneficial levels over a period of at least two to twelve weeks and having a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide, and
- (b) an agricultural adjuvant.

36. (Twice amended) A method for the treatment or prophylaxis of a fungal disease in a target plant wherein the method comprises contacting a plant cell, a plant tissue, or a seed with a particle wherein the particle comprises a triazole fungicide dispersed in a polymer matrix which releases the triazole fungicide at biocidally beneficial levels over a period of at least two to twelve weeks and having a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide [, provided that the polymer matrix does not comprise polyethylene].